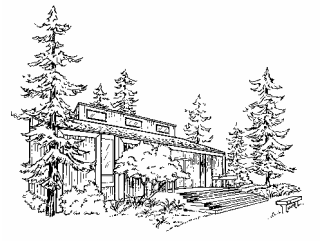

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Attn: Jay Jasperes, Engineer (707) 521-1866

Subject: Graton Community Sewer Project
CONCEPT COST ESTIMATE, APRIL 15, 2002

Here is our report of concept cost estimates and savings for the Graton Community Sewer Project as outlined in the recently completed Water Balance Study prepared by this firm. Project costs and savings are summarized on the first page of the enclosed Concept Cost Estimate to provide the basis for a rate analysis and financial feasibility study. Details and assumptions incorporated in the estimates are provided in the tables following the summary. For each project a high and low estimate of costs and savings has been provided in order that the rate analysis and financial feasibility study can evaluate the projects' effects on the community across a range of values. In addition to the capital costs, operational savings have been identified which will accrue as a result of implementing certain of these projects. These savings are identified alongside the costs in the Concept Cost Estimate. It is essential that the savings be accounted in the rate analysis and financial feasibility study because it is clear in the low estimates that a net savings can be achieved. If the pond covers can be achieved for a cost nearer the low estimate, and the drip irrigation is acceptable to the Regional Water Quality Control Board, this project will result in a net savings to the community.

We understand the user rate analysis and financial feasibility study is to be prepared by Economic & Planning Systems, Inc under contract to the Sonoma County Water Agency (SCWA). Operating costs are not provided here as will be needed for that study, and will be provided in a separate report by the Graton Community Sewer Project Group. This group is incorporating as a non-profit entity in order to qualify and apply for grants and low-interest loans to fund these projects.

The Community's approach is to reduce "non-sewage" flows to manage the system within existing capacity rather than to increase system capacity. Projects outlined in Exhibit A constitute the Community's action plan for management of "non-sewage" flows such that the objective of "Zero Discharge to Atascadero Creek" can be met in the years of highest flow as represented by the 1997-98 weather year modeled in the previously prepared "Hydraulic Analysis". Projects are categorized as to routine maintenance projects and new capital projects. Three maintenance projects have been identified to improve plant operations and decrease flows. Two capital projects have been selected to better manage existing capacity and provide an alternate disposal method to stream discharge. Sub-surface land-based disposal will free the disposal operations from weather dependency as discharge will no longer be limited by stream flow or precipitation.

This distinction of maintenance and capital projects is very important in comparing the Community's approach to other alternatives such as transporting Graton's secondary effluent to Forestville for tertiary filtration. To provide an equal comparison, other alternatives must also include the routine maintenance costs identified here in addition to their capital project costs. The identified routine maintenance costs are not unique to any capital project alternative for treatment or storage capacity, but are in fact an imbedded feature of the existing system which affects downstream features and processes. These costs are related to known maintenance tasks which must be factored into any wastewater system's operating budget.

At this time the Projects are defined at the conceptual level. No field investigations have been conducted to determine conditions of existing faculties or to evaluate site conditions for proposed facilities. Quantities used in these estimates are derived from the Record Plans of the system prepared in 1976. Although I have not conducted formal field investigations, I am familiar with the plant facilities and the community. In lieu of field investigations I have made assumptions as to the condition of facilities and the required degree of repairs that will be required based on the age of facilities and general knowledge of the decay or depreciation rate of public infrastructure. In order to accommodate the inherent uncertainty in a concept estimate, a range of costs is presented where the high end includes a contingency factor. More exact quantities and conditions will be established when field investigations have been conducted and engineering documentation is prepared in order to proceed with the outlined projects. Estimated engineering fees are included for all proposed projects.

Operational cost savings have been derived based on an estimate of current operational costs. Current operational costs are estimated on the first sheet below the summary of costs and savings. Operational costs have been further apportioned among the system operations; collection, treatment, storage and disposal. This was done so a fair savings allocation could be made to those projects which do not realize a savings across all operational phases. These savings are estimated on the detailed analysis sheets, and a Benefit/Cost Ratio calculated to illustrate their cost-effectiveness.

Projected timelines for the Graton Community Sewer Project have been provided as supplemental information. At this time the schedule is speculative as it depends on funding availability and assumption of operations by the Graton Community Services District to be formed.

Your review of this report and following comments will be appreciated.

Sincerely,

Peter J. Lescure, PE
Principal Civil Engineer
RCE 28044

Encl Concept Cost Estimate

cc file 97023 \\Server\lescure\!LE Doc's & S'sheets\Project Related\97's\97023 Graton CSD\Analysis & Reports\GCSP Project Cost Estimate\SCWA-JJ 031401 rpt.doc
Graton Community Sewer Project, M. Williams

Exhibit A

GRATON COMMUNITY SEWER PROJECT

MAINTENANCE PROJECTS

1. In-Plant Surface Diversions - One contributor of "non-sewage" flows is the observed precipitation runoff from the plant roads to the ponds, and occasional flood waters from the creek. The scope of this project is to regrade the roads to shed runoff away from the ponds. We anticipate this will be done in conjunction with construction efforts for installation of the pond covers. Flood waters overtopping a sag in the bank adjacent Aerated Pond #2 will be precluded by raising the road/berm height.

2. Holding Pond Cleaning – Removal of accumulated sludge will increase useable storage capacity. Accumulated sludge in the Holding Ponds precludes utilization of the lower 6 million gallons (MG) of storage volume out of the total 23 MG storage volume. Two drawoff pipes are located approximately 1 foot and 5 feet off the pond bottom. As the lower drawoff is within the current sludge layer, operators are restricted to using the upper drawoff. The drawoff mechanism will be altered to allow drawing from any level above the accumulated sludge and below the surface scum or floating algae and duckweed. Though not explicitly costed in this estimate, the drawoff mechanism will be altered to allow this – either with a multiple-valved manifold or a floating drawoff device. It remains to be determined whether the sludge can be disposed of onsite within the irrigation fields, or whether it must be transported offsite to a licensed facility. This is a major factor between the high and low costs

3. Source Control Flow Reduction – A combined program relying on public education and identification of the overall sources will be implemented when the Agency approves the recently proposed I&I Feasibility Study. Public education regarding costs and benefits in terms of wastewater treatment will be implemented to target those sources emanating from private properties; roof drains, sump pumps, yard drains, leaking fixtures, etc. No additional costs are anticipated by this estimate for reducing these private sources as further projects are considered to be not cost-effective. Policy measures may be implemented such as requesting the Sonoma County PRMD to require inspection of private laterals in the course of any permitted construction, with remedial action to occur as indicated to reduce inflow and infiltration.

   This estimate does anticipate further costs in terms of the public facility improvements; primarily leaking manhole and cleanout repair, lift station repair, and collection line repair if indicated by investigations and analysis to be cost-effective. These costs are enumerated under I&I Control.

Exhibit A (cont'd)

GRATON COMMUNITY SEWER PROJECT

CAPITAL PROJECTS

4. Cover Storage Ponds - The largest, most obvious contributor of "non-sewage" flows is direct precipitation on the storage ponds. Floating covers are proposed to preclude precipitation and to limit evaporation. The net effect on the ponds' hydrologic balance is to reduce the peak volume as the ponds approach capacity in Winter, and prevent evaporative losses in the Summer when the effluent is needed for irrigation. An expected collateral benefit of the pond covering is prevention of duckweed growth by removal of sunlight, and thereby preventing accumulation of sludge and need for future pumping. These collateral benefits have not been identified as "Savings" in the Concept Cost Estimate.

   Furthermore, the presently accumulated sludge would be expected to bio-degrade (at a presently unknown rate) which presents the possibility of foregoing the Pond Cleaning project. There is some risk in this strategy however that a "peak wet weather" year may occur in the meanwhile which would require the storage volume presently precluded by the sludge as described above. If the actual sludge level were determined and the drawoff device adapted as also described above, it may be demonstrated that sufficient storage volume exists to manage the "peak wet weather" scenario.

5. All-Weather Sub-surface Disposal on 22 Acres of the Treatment Plant Irrigation Fields

   Indirect Re-use through soil infiltration and recovery has been identified as a viable means of wastewater reclamation [1, 2]. Two alternate distribution methods have been identified.

   Infiltration Trenches – percolation of the secondary effluent will be accomplished through gravel filled trenches. Groundwater levels will be controlled through "exfiltration" trenches interspersed with the infiltration trenches and the accumulated filtrate discharged to the stream as groundwater. Appropriate separation will be provided between the infiltration and exfiltration trenches to achieve necessary water quality standards. Separation will be based on characteristics of the secondary effluent, soil characteristics, hydraulic loading rate, and water quality standards to be achieved.

   Sub-Surface Drip - distribution of the secondary effluent will be accomplished through sub-surface drip irrigation technology which is emerging as a proven method for wastewater dispersal. With the shallow and even distribution afforded by drip irrigation, we anticipate the exfiltration galleries will not be required to control the groundwater level. The controls, filters, and dispersal tubing have evolved to a practical, reliable state. Sub-surface drip irrigation is far less costly than the infiltration/exfiltration trench system.

   Additional irrigation area may be gained along the bicycle trail utilizing the sub-surface drip technology to irrigate trees as it would not expose the public to sewage, and it could be supplied economically from the existing effluent pipeline along the trail.

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[1] Goff, R.L., M.A. Gross, et al, 2001. Using Drains Between Renovation Trenches to Lower a Seasonal Water Table. In: Onsite Wastewater Treatment, Proceedings of the Ninth National Symposium on Individual and Small Community Sewage Systems, p. 153, ASAE. St. Joseph, MI.

[2] Wolf, D.C., M.A. Gross, et al, 1998. Renovation of Onsite Domestic Wastewater in a Poorly Drained Soil. In: Onsite Wastewater Treatment, Proceedings of the Eighth National Symposium on Individual and Small Community Sewage Systems, p. 320, ASAE. St. Joseph, MI.

PROJECTED TIMELINES FOR THE GRATON COMMUNITY SEWER PROJECT:

GOVERNANCE ITEMS

- Funding Proposal to SCWA for I&I and Conservation Feasibility — January 2002
- Graton Community Services District Formation – Elections — November 2002

MAINTENANCE BUDGET ITEMS

- Inflow & Infiltration — 2002 - 2003
  - Study
  - Implementation
- Source Conservation / Flow Reduction Program — 2003
- Storage Ponds Cleaning — 2002
  - Waste characterization for disposal
  - Permitting for onsite disposal or hauling
  - Bid solicitation
  - Implementation
- Plant Site Improvements — 2003 – 2004
  - Engineering
  - Flooding Mitigation
  - Surface Diversions

CAPITAL BUDGET ITEMS

- Bridge Funding for Engineering — 2002 - 2003
- Funding for Construction Improvements — 2004 – 2006
  - Preliminary Engineering & Estimate
  - Environmental Review and Documents
  - Application
  - Grant or loan received
- Subsurface Dispersal / Irrigation / Soil Based Filtration
  - Site Testing and Analysis
  - Engineering Design
  - Pilot Program Construction
  - Pilot Program Monitoring
  - Full System Construction
- Storage Pond Covers
  - Engineering Design
  - Full System Construction